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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,763	09/23/2003	Xin Jin	555255012578	2548

7590 08/21/2007

Joseph M. Sauer, Esq.
JONES DAY
North Point
901 Lakeside Ave
Cleveland, OH 44114

EXAMINER	
LAU, TUNG S	

ART UNIT	PAPER NUMBER
2863	

MAIL DATE	DELIVERY MODE
08/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/668,763	JIN ET AL.	
	Examiner	Art Unit	
	Tung S. Lau	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *23,24,26-38,40-50 and 52-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *23,24,26-38,40-50 and 52-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *05 July 2007* .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

a. Claims 23, 37, 48, 26, 34, 35, 32, 55, 33, 56, 36, 40, 41, 44, 46, 49, 24, 38, 50, 27, 28, 29, 30, 42, 43, 45, 52, 53, 57, 58 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida Toshio (JP 07-241039) in view of Komata Yoshiaki (JP 2001-330654).

Regarding claim 23:

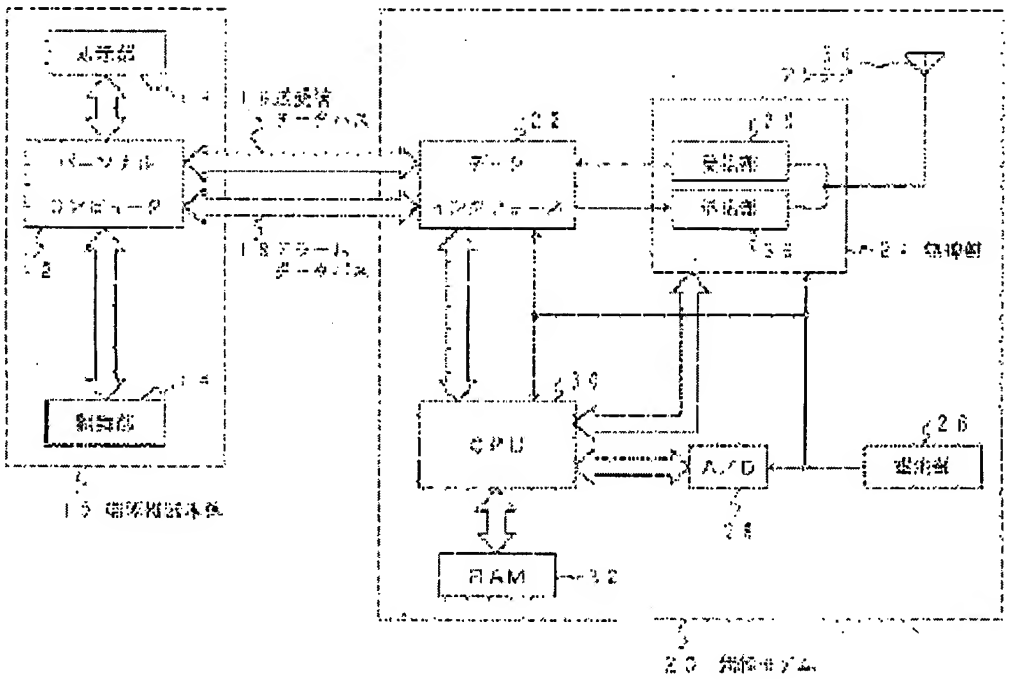
Yoshida Toshio discloses a method of estimating a usable battery capacity for a mobile device (abstract), comprising: determining one or more operating condition of the mobile device (page 1, section 0003), determining a present loaded battery voltage of the mobile device (page 1, section 0003); determining a present unloaded battery voltage based on the present loaded battery voltage and the one or more operating condition (page 5, section 0034, fig. 4A, 4B); determining a present battery capacity using the present unloaded battery voltage (page 5, section 0034); determining a loaded operational threshold voltage of the mobile device (page 5, section 0034), the loaded operational threshold voltage being a battery voltage below which an operation of the mobile device is shut off (fig. 1A, VD, fig. 4B, VD, page 3, section 0024), and at least

one operation of the mobil device remains operable (page 2-3, section 0018); determining an unloaded operational threshold voltage of the mobile device based on the loaded operational threshold voltage and the one or more operating condition (page 2-3, section 0018); determining an operational threshold capacity using the unloaded operational threshold voltage (fig. 4A, 4B), and estimating the usable battery capacity based on the present battery capacity and the operational threshold capacity(fig. 4A, 4B, page 2-3, section 0018), storing the usable battery capacity estimation in a computer-readable medium (fig. 4A, 4B, fig. 1, unit 30); wherein the usable battery capacity is estimated as a function of time (fig. 4A, 4B).

Yoshida Toshio does not disclose the present unloaded battery voltage represents a battery voltage in a completely unloaded condition, Komata Yoshiaki the present unloaded battery voltage represents a battery voltage in a completely unloaded condition (section 6,7,14, 31), in order to improve the precision of potential detection (section 31).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yoshida Toshio to have the present unloaded battery voltage represents a battery voltage in a completely unloaded condition taught by , Komata Yoshiaki), in order to improve the precision of potential detection.

【図１】



Regarding claim 37:

Yoshida Toshio discloses a method of estimating the capacity of a battery to power a predetermined feature of a battery operated device, the predetermined feature operable when the battery is above a corresponding shut off voltage (abstract), the method comprising: measuring a battery voltage (fig. 4A, 4B); determining an unloaded battery voltage by translating the measured battery voltage to take into account a load on the battery (page 2-3, section 0018); determining at least one unloaded shut off voltage by translating the shut off voltage to take into account the load on the battery (page 2-3, section 0018, page 4, section 0025); determining a battery capacity using the unloaded battery voltage (page 5, section 0034); determining a shut off capacity using the unloaded shut off voltage (fig. 4A, 4B, VD); and estimating an estimated capacity

for the predetermined feature as a difference between the shut off capacity and the battery capacity (fig. 4A, 4B); wherein the predetermined feature will shut off if the battery falls below the shut off capacity (fig. 4A, 4B) and wherein at least one feature of the battery operated device will remain operational if the battery falls below the shut off capacity (fig.4A, 4B, VD) and storing the estimated capacity in a computer-readable medium (fig. 1, unit 30); wherein the estimated capacity is estimated as a function of time (fig. 4A, 4B).

Yoshida Toshio does not disclose the present unloaded battery voltage represents a battery voltage in a completely unloaded condition, Komata Yoshiaki the present unloaded battery voltage represents a battery voltage in a completely unloaded condition (section 6,7,14, 31), in order to improve the precision of potential detection (section 31).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yoshida Toshio to have the present unloaded battery voltage represents a battery voltage in a completely unloaded condition taught by , Komata Yoshiaki), in order to improve the precision of potential detection.

Regarding claim 48:

Yoshida Toshio discloses a mobile device (fig. 1, unit 20), comprising: a battery (fig. 1, unit 26) configured to power the mobile device, one or more sensor circuits (fig. 1, unit 28,30) configured to measure one or more operating conditions of the battery (fig. 4A, 4B), a battery voltage measurement circuit (fig.

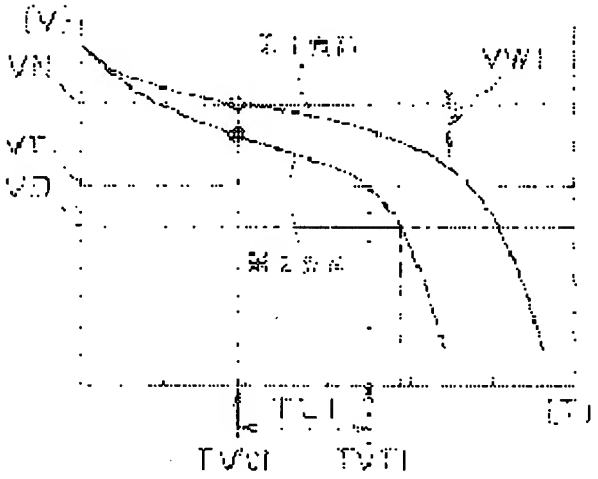
1, unit 28) configured to measure a present loaded battery voltage of the battery (fig. 4a, 4B, page 2-3, section 0018); a battery capacity estimation program (fig. 3-4) configured to (1) determine a present unloaded battery voltage based on the present loaded battery voltage and the one or more operating conditions of the battery (fig. 4A, 4B, page 2-3, section 00018), and (2) determine a present battery capacity using the present unloaded battery voltage (fig. 4A, 4B, page 2-3, section 00018); the battery capacity estimation program being further configured to (1) determine a loaded operational threshold voltage of the mobile device (fig. 4A, 4B, page 2-3, section 00018), the loaded operational threshold voltage being a battery voltage below which an operation of the mobile device is shut off (fig. 4A, 4B, VD, page 5, section 0034), but at least one operation of the mobile device remains operational (fig. 1,unit 28, fig. 4A, 4B) , (2) determine an the loaded operational threshold voltage of the mobile device based on the loaded operational threshold voltage and the one or more operating parameters (fig. 4A, 4B, page 2-3, section 00018), and (3) determine an operational threshold capacity using the unloaded operational threshold voltage (fig. 4A, 4B, VD); and the battery capacity estimation program being further configured to estimate a usable battery capacity based on the present battery capacity and the operational threshold capacity (fig. 4A, 4B), wherein the usable battery capacity is estimated as a function of time (fig. 4A, 4B).

Yoshida Toshio does not disclose the present unloaded battery voltage represents a battery voltage in a completely unloaded condition, Komata

Yoshiaki the present unloaded battery voltage represents a battery voltage in a completely unloaded condition (section 6,7,14, 31), in order to improve the precision of potential detection (section 31).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yoshida Toshio to have the present unloaded battery voltage represents a battery voltage in a completely unloaded condition taught by , Komata Yoshiaki), in order to improve the precision of potential detection.

【図4】



The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. I , 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

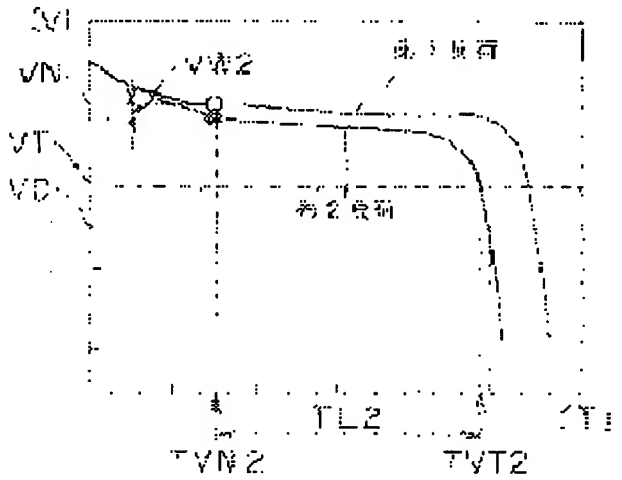
Yoshida Toshio, and Komata Yoshiaki are analogous art because they are from the same field of endeavor and try to solve the same problem, battery power level detection device.

Regarding claim 26, Yoshida Toshio discloses the mobile device includes a profile table that relates a plurality of battery profile values with the one or more operating conditions of the mobile device, and wherein the profile table is used to determine the present loaded battery voltage, the present battery capacity, the unloaded operational threshold voltage and the operational threshold capacity (fig. 4A, 4B, where different operation was recorded).

Regarding claim 34, Yoshida Toshio discloses accessing the profile table to translate the operating condition into a battery profile value; adjusting the battery profile value by a correction factor to generate a corrected battery profile value (Col. 4A, 4B); and using the corrected battery profile value to determine the present battery capacity and the operational threshold capacity (fig. 4A, 4B, where different operation was recorded).

Regarding claim 35, Yoshida Toshio discloses resistance of the battery (fig. 1, unit 26).

Regarding claims 32, 55, Yoshida Toshio discloses including current (page 2, section 0018, the load draw both voltage and current in fig. 1, unit 24).



(B)

Regarding claims 33, 56, Yoshida Toshio discloses including transmitting power of the mobile device (fig. 1, unit 34, wireless antenna).

Regarding claim 36, Yoshida Toshio discloses remaining time based on capacity (fig. 4A, 4B).

Regarding claim 40, Yoshida Toshio discloses determining a battery current delivered by the battery (fig. 4A, 4B, both current and voltage); determining a predetermined threshold capacity corresponding to a battery capacity required to continue to deliver the battery current for a predetermined amount of time (fig. 4A, 4B, VD); and comparing the estimated capacity to the predetermined threshold capacity (fig. 4A, 4B, VD).

Regarding claim 41, Yoshida Toshio discloses identifying when the estimated capacity is less than the predetermined threshold capacity (fig. 4A, VD); and in

response to identifying that the estimated capacity is less than the predetermined threshold capacity (fig. 4A, 4B), triggering a predetermined action on the battery operated device (fig. 4A, 4B, page 2-3, section 0018, page 5, section 0034).

Regarding claim 44, Yoshida Toshio discloses the predetermined action is displaying the estimated capacity (page 1, section 0004), the estimated capacity being displayed in terms of the predetermined amount of time after which the predetermined function be shut off (page 2, section 009, fig. 4A, 4B).

Regarding claim 46, Yoshida Toshio discloses determining a battery current delivered by the battery occurs at the time of the battery estimation (fig. 4A, 4B).

Regarding claim 49, Yoshida Toshio discloses a profile table stored in one or more memory location on the mobile device and accessible by the battery capacity estimation program (abstract, fug. 4A, 4B), the profile table relating a plurality of battery profile values with the one or more operating conditions of the mobile device (page 2-3, section 0018); wherein the battery capacity estimation program is configured to use the profile table to determine the present unloaded battery voltage (fig. 4A, 4B), the present battery capacity (fig. 4A, 4B), the unloaded operational threshold voltage and the operational threshold capacity (fig. 4A, 4B,VD).

Regarding claim 24, Yoshida Toshio discloses wherein the usable battery capacity is an accessible capacity (fig. 4A, 4B, VD), and wherein the loaded operational threshold voltage is a battery voltage below which a radio in the

mobile device is shut off (page 5, section 0034), and at least one operation of the mobile device remains operable (fig. 4A, fig. 1, unit 28).

Regarding claim 38, Yoshida Toshio discloses the predetermined feature includes a radio on the battery operated device, the radio having a corresponding radio shut off voltage (page 5, section 0034).

Regarding claim 50, Yoshida Toshio discloses a radio configured to communicate via a wireless network (fig. 1, unit 34); wherein the loaded operational threshold voltage is a battery voltage below which the radio in the mobile device is shut off (page 5, section 0034), but at least one operation of the mobile device remains operational (fig. 1, unit 28, fig. 4A).

Regarding claim 27, Yoshida Toshio discloses the mobile device generates a warning message if the usable battery capacity falls below a warning threshold (page 2, section 0009, fig. 4A, 4B, VD, page 3, section 0024).

Regarding claim 28, Yoshida Toshio discloses the warning threshold is determined as a function of a predetermined warning time period and a battery current (page 2, section 0009, page 3, section 0024).

Regarding claim 29, Yoshida Toshio discloses the predetermined warning time period is an amount of time before the unloaded operational threshold voltage is reached that the warning message is to be generated (fig. 4A, 4B, VD, where is not operable by the equipment).

Regarding claim 30, Yoshida Toshio discloses the warning message is generated when a difference between the present battery capacity (fig. 4A,

4B)and the operational threshold capacity becomes less than a multiple of the battery current and the predetermined warning time period (fig. 4A, 4B, TVN1-TVN2),

Regarding claim 42, Yoshida Toshio discloses the predetermined action is a warning action (page 2, section 009).

Regarding claim 43, Yoshida Toshio discloses wherein the warning action is a battery low warning (fig. 4A, VD).

Regarding claim 45, Yoshida Toshio discloses issuing a warning (page 2, section 009) to a user of the battery operated device indicating that the predetermined feature will be shut off (fig. 4A, VD) at a time which is substantially coincidental with the predetermined amount of time after the warning (fig. 4A, 4B, anytime can issue the warning).

Regarding claim 52, Yoshida Toshio discloses wherein the mobile device is configured to generate a warning message if the usable battery capacity falls below a warning threshold (fig. 4A, 4B, VD).

Regarding claim 53, Yoshida Toshio discloses the warning threshold is determined as a function of a predetermined warning time period and a battery current (page 2, section 0009).

Regarding claims 57, 58 and 59, Yoshida Toshio discloses the usable battery capacity is in units of current multiplied by time (fig. 4A, 4B).

b. Claims 31, 54 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida Toshio (JP 07-241039) in view of Komata Yoshiaki (JP 2001-330654) and further in view of Rompe (U.S. Patent 5,903,856).

Regarding claims 31, 54, Yoshida Toshio and Komata Yoshiaki disclose including the subject matter discussed above except temperature.
Rompe discloses temperature (col. 6, lines 17-24), in order to increase accuracy of calculated cycle momentarily available battery capacity (col. 6, lines 17-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yoshida Toshio to have the temperature taught by Rompe in order to increase accuracy of calculated cycle momentarily available battery capacity.

Regarding claim 47, Yoshida Toshio discloses determining an unloaded battery voltage by translating the measured battery voltage to take into account the load on the battery includes the step of determining at least one operating condition for the battery operated device selected from the group consisting of determining an effective serial resistance for the battery (fig. 1, unit 24), determining a of the battery operated device (fig. 4A, 4B), applying a correction parameter,

determining the transmit power, and determining an idle state (fig. 4A, 4B, any state including idle).

Yoshida Toshio and Komata Yoshiaki do not disclose temperature. Rompe discloses temperature (col. 6, lines 17-24), in order to increase accuracy of calculated cycle momentarily available battery capacity (col. 6, lines 17-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yoshida Toshio and Komata Yoshiaki to have the temperature taught by Rompe in order to increase accuracy of calculated cycle momentarily available battery capacity.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. I , 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Yoshida Toshio, Komata Yoshiaki and Rompe are analogous art because they are from the same field of endeavor and try to solve the same problem, battery power level detection device.

Response to Arguments

2. Applicant's arguments with respect to the amended claims have been considered but are moot in view of the new ground(s) of rejection. However, applicant's arguments filed 07/23/2007have been fully considered but they are not persuasive.

A. Applicants argue that the prior art does not show the battery voltage in a complete unloaded condition. (remarks page 9, lines 11-12).

Newly found prior art, Komata Yoshiaki (JP 2001-330654) discloses the battery voltage in a complete unloaded condition in section 6,7,14, 31.

Conclusion

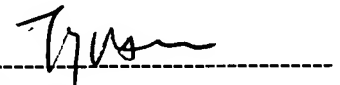
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory

period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact information

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung S. Lau whose telephone number is 571-272-2274. The examiner can normally be reached on M-F 9-5:30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 571-272-2269. The fax phone numbers for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tung S. Lau
AU 2863, Patent examiner
July 30, 2007